Amblyraja radiata (Thorny Skate)

Priority 2 Species of Greatest Conservation Need (SGCN)

Class: *Chondrichthyes* (Sharks, Rays, And Skates)
Order: *Rajiformes* (Rays)
Family: *Rajidae* (Skates)

General comments:

ESA species of Concern - Atlantic-West Greenland to NY

No Species Conservation Range Maps Available for Thorny Skate

SGCN Priority Ranking - Designation Criteria:

Risk of Extirpation:

IUCN Red List Status: **Vulnerable**

State Special Concern or NMFS Species of Concern:

Amblyraja radiata is listed as a Species of Concern by the National Marine Fisheries Service.

Recent Significant Declines: NA
Regional Endemic: NA
High Regional Conservation Priority: NA
High Climate Change Vulnerability: NA
Understudied rare taxa: NA
Historical: NA
Culturally Significant: NA

Habitats Assigned to Thorny Skate:

Formation Name **Subtidal**

Macrogroup Name **Subtidal Coarse Gravel Bottom**

Habitat System Name: Coarse Gravel **Notes:** *adult non-spawning, juvenile*

Habitat System Name: Erect Epifauna **Notes:** *adult non-spawning, juvenile*

Macrogroup Name **Subtidal Mud Bottom**

Habitat System Name: Submerged Aquatic Vegetation **Notes:** *adult non-spawning, juvenile*

Habitat System Name: Unvegetated ****Primary Habitat**** **Notes:** *adult non-spawning, juvenile*

Macrogroup Name **Subtidal Pelagic (Water Column)**

Habitat System Name: Offshore

Macrogroup Name **Subtidal Sand Bottom**

Habitat System Name: Submerged Aquatic Vegetation **Notes:** *adult non-spawning, juvenile*

Habitat System Name: Unvegetated ****Primary Habitat**** **Notes:** *adult non-spawning, juvenile*

Stressors Assigned to Thorny Skate:

Stressor Priority Level based on Severity and Actionability

	Moderate Severity	High Severity
Highly Actionable	Medium-High	High
Moderately Actionable	Medium	Medium-High
Actionable with Difficulty	Low	Low

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IUCN Level 1 Threat **Biological Resource Use**

IUCN Level 2 Threat: Fishing and Harvesting of Aquatic Resources

Severity: Severe **Actionability:** Moderately actionable

Notes: The thorny skate (like other elasmobranchs) are highly vulnerable to exploitation because of their k-selective life histories (i.e. slow growth rates, late maturity, low fecundity). Although this species is not directly targeted, it is commonly captured as bycatch in the multispecies trawl and bottom gillnet fisheries. Currently, the thorny skate is prohibited from capture (in US waters) due to low biomass levels. Interestingly, despite their prohibited status, populations have continued to decrease. Currently, discard mortality rates in the trawl fishery have been investigated for thorny skates and were reported to be moderate. To ensure the population does not decline further it's essential to continue to assess their physiological tolerance levels and ability to recover from fishing capture. In addition, it is also important to assess the impacts (i.e. bycatch rates) in the gillnet fishery.

IUCN Level 1 Threat **Pollution**

IUCN Level 2 Threat: Industrial and Military Effluents

Severity: Moderate Severity **Actionability:** Moderately actionable

Notes: Many elasmobranch species use inshore coastal and estuarine habitats as a safe place for finding food, giving birth and growing up away from predators and competitors. This means that they are vulnerable to negative changes in their habitat. For example, sharks, skates and rays are very susceptible to pollution and environmental contamination. Pollution in the ocean has either filtered from land activities or has been directly deposited into the seas. As apex predators with slow growth, they accumulate all the pollutants and toxins in the environment and bioaccumulating all the toxins of their prey. Chemical pollution, in the form of mercury, DDT, organochlorines, etc., has been documented in several shark populations in close proximity to areas of human populations. This could become a significant threat as we learn more about movement patterns and habitat usages of skates

IUCN Level 1 Threat **Climate Change and Severe Weather**

IUCN Level 2 Threat: Habitat Shifting or Alteration

Severity: Severe **Actionability:** Actionable with difficulty

Notes: Climate driven increases in ocean temperature are occurring and will have long-term effects on global fisheries. Consequently, the first acclimatizing response to temperature variations in fishes is typically to shift spatial distribution in order to stay within there ideal thermal tolerance range. Particularly it's expected "cold-water" fish species ranges are anticipated to be reduced. Thus, more research is needed to better understanding the genetic and physiological sensitivity of skates to climate change. In addition, it will also be important to determine how temperature changes will alter distribution in common prey items. Ocean acidification could also have an impact on eggcase structure/integrity, which could significantly affect the success/recovery of these populations. However, more research is needed

IUCN Level 2 Threat: Temperature Extremes

Severity: Moderate Severity **Actionability:** Actionable with difficulty

Notes: Shift in ocean temperatures will influence how a species moves and travels as well as their food sources; warmer surface waters also affect the distribution of essential nutrients

IUCN Level 1 Threat **Other Options**

IUCN Level 2 Threat: Lack of knowledge

Severity: Severe **Actionability:** Actionable with difficulty

Notes: In general, there is a significant lack of updated/accurate life history information and movement data for this species (throughout their range and for various life stages). In order to effectively manage this species in the future, a thorough understanding of their basic biology and critical habitats are essential

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Species Level Conservation Actions Assigned to Thorny Skate:

Only species specific conservation actions that address high (red) or medium-high (orange) priority stressors are summarized here.

Conservation Action **Category:** Research **Biological Priority:** critical **Type:** new
Develop an improved understanding of discard mortality rates

Stressor(s) Addressed By This Conservation Action

Fishing and Harvesting of Aquatic Resources

Conservation Action **Category:** Research **Biological Priority:** critical **Type:** new
Determine the location and timing of important habitat use at different life history stages

Stressor(s) Addressed By This Conservation Action

Fishing and Harvesting of Aquatic Resources

Conservation Action **Category:** Research **Biological Priority:** critical **Type:** new
Update life history data across species range

Stressor(s) Addressed By This Conservation Action

Fishing and Harvesting of Aquatic Resources

Guild Level Conservation Actions:

This Species is currently not attributed to a guild.

Broad Taxonomic Group Conservation Actions:

Additional relevant conservation actions for this species are assigned within broader taxonomic groups in Maine's 2015 Wildlife Action Plan: Element 4, Table 4-1.

Habitat Based Conservation Actions:

Additional conservation actions that may benefit habitat(s) associated with this species can be found in Maine's 2015 Wildlife Action Plan: Element 4, Table 4-15. Click on the Habitat Grouping of interest to launch a habitat based report summarizing relevant conservation actions and associated SGCN.

The Wildlife Action Plan was developed through a lengthy participatory process with state agencies, targeted conservation partners, and the general public. The Plan is non-regulatory. The species, stressors, and voluntary conservation actions identified in the Plan complement, but do not replace, existing work programs and priorities by state agencies and partners.